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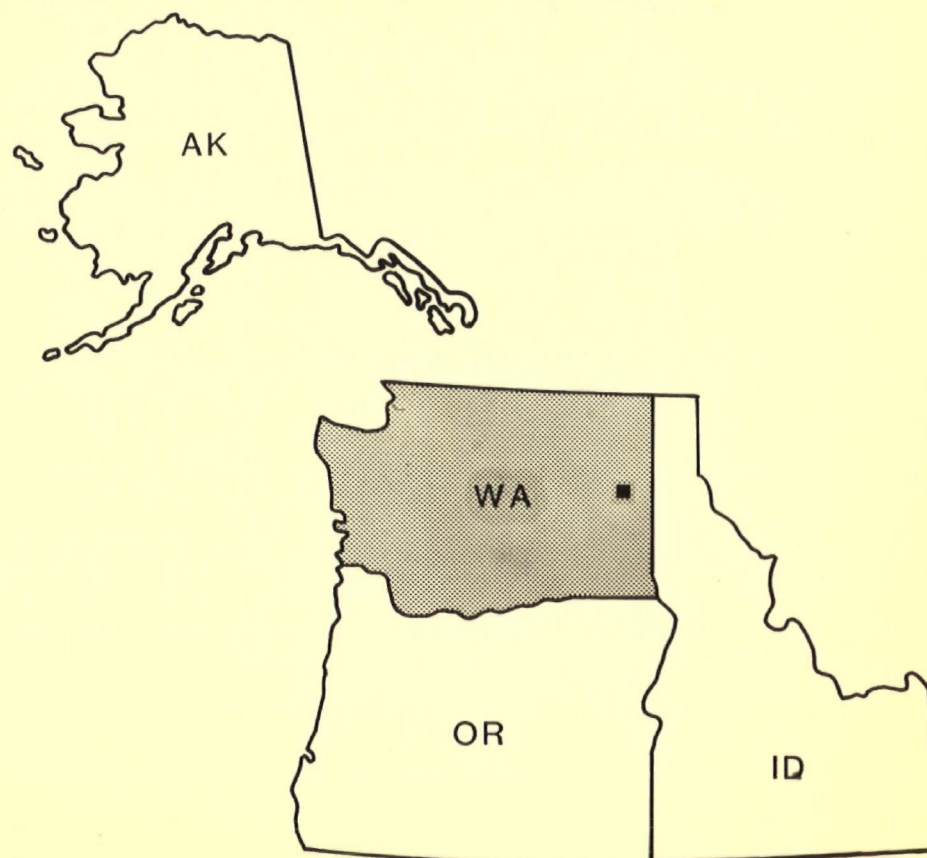
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AERIAL PHOTOGRAPHIC ANALYSIS OF THE GENERAL ELECTRIC-SPOKANE APPARATUS FACILITY Spokane, Washington

EPA Region 10



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AERIAL PHOTOGRAPHIC ANALYSIS OF THE GENERAL
ELECTRIC-SPOKANE APPARATUS FACILITY

Spokane, Washington

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ABSTRACT

This report presents a historical analysis of the General Electric-Spokane Apparatus facility in Spokane, Washington. It utilized archival photography spanning 40 years from 1946 to 1985 as the primary source data. This report was prepared to assess waste disposal practices at the facility during this time frame.

The future location of the site was visible in 1946. By 1951, a lumber mill occupied the site. One possible waste disposal area was detected in 1962 and three possible stains and an accumulation of debris was observed in 1968. By 1972, two new possible waste disposal areas were noted. In 1982, additional waste was disposed of at one of the two possible waste disposal areas noted in 1972. A possible staging of drums was noted in 1985.

This report was prepared by the U.S. Environmental Protection Agency's Environmental Monitoring Systems Laboratory in Las Vegas, Nevada for the Agency's Environmental Services Division in Region 10 at Seattle, Washington and the Office of Emergency and Remedial Response in Washington D.C.

CONTENTS

	<u>Page</u>
Abstract	iii
Introduction	1
Methodology	3
Analysis Summary	7
Photo Analysis	8

FIGURES

<u>Number</u>	
1 Site location map, Washington	vi
2 Local site location map, Spokane, Washington	6
3 General Electric-Spokane Apparatus Facility, November 11, 1946	9
4 General Electric-Spokane Apparatus Facility, July 19, 1951	11
5 General Electric-Spokane Apparatus Facility, August 14, 1962	13
6 General Electric-Spokane Apparatus Facility, July 4, 1968	15
7 General Electric-Spokane Apparatus Facility, July 27, 1972	17
8 General Electric-Spokane Apparatus Facility, July 15, 1977	19
9 General Electric-Spokane Apparatus Facility, June 18, 1978	21
10 General Electric-Spokane Apparatus Facility, March 7, 1982	23
11 General Electric-Spokane Apparatus Facility, July 10, 1985	25

TABLE

1 Documentation of Aerial Photography	5
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Figure 1. Site location map, Washington. Scale 1:2,500,000.

INTRODUCTION

This report presents a comprehensive analysis of the General Electric-Spokane Apparatus facility located in Spokane, Washington (Figure 1). The analysis utilized archival aerial photography spanning a 40-year period (1946-1985). The photographs were analyzed to identify surface seepage, waste disposal activities, discharges into watercourses, and any vegetation stress related to operations at the facility.

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METHODOLOGY

Stereoscopic pairs of historical aerial photographs are used to perform the analysis. Stereo viewing enhances the interpretation because it allows the analyst to observe the vertical as well as horizontal spatial relationships of natural and cultural features. Stereoscopy is also an aid in distinguishing between various shapes, tones, textures, and colors that can be found within the study area.

Evidence of waste burial is a prime consideration when conducting a hazardous waste analysis. Leachate or seepage resulting from burial and dumping of hazardous materials might threaten existing surface or ground-water sources. Pools of unexplained liquid are routinely noted because they can indicate seepage from buried wastes that may enter drainage channels and allow contaminants to move off the site. An excellent indicator of how well hazardous materials are being handled at a site is the presence or absence of spills, spill stains, and vegetation damage. Trees and other forms of vegetation that exhibit a marked color difference from surrounding members of the same species are labeled "dead," "stressed," or "damaged" based upon the degree of noticeable variation. Vegetation is so labeled only after consideration of the season in which the photographs were acquired.

The U.S. Environmental Protection Agency's Statement of Procedures on Floodplain Management and Wetlands Protection (Executive Orders 11988 and 11990, respectively) requires EPA to determine if removal or remedial actions at hazardous waste sites will affect wetlands or floodplains and to avoid or minimize adverse impacts on those areas. To aid in compliance with these orders, significant wetland vegetation located within and adjacent to the sites have been identified and delineated. However, the sites have not been visited to verify the accuracy of wetland vegetation identification.

Drainage analysis determines the direction a spill or surface runoff would follow. Direction of drainage is determined from analysis of the photographs and from U.S. Geological Survey topographic maps. Whenever they are available, 7.5-minute quadrangle maps (scale 1:24,000) are used to show site location and to provide geographic and topographic information.

Results of the analysis are shown on annotated overlays attached to the photos. The following table provides documentation of the photographs used in this report:

TABLE 1. DOCUMENTATION OF AERIAL PHOTOGRAPHY

Site name, location, and geographic coordinates	Figures	Date of acquisition	Original scale	Film type†	Photo source‡	Photo I.D.	Frame
General Electric	3	11-11-46	1:27,000	B&W	EROS	XB	126
Facility	4	07-19-51	1:20,000	B&W	EROS	VBBK	1000
Spokane, WA	5	08-14-62	1:40,000	B&W	ASCS	VDGX	2-28
47°40'27"N	6	07-04-68	1:20,000	B&W	ASCS	AAN	146
117°20'39"W	7	07-27-72	1:30,000	B&W	EROS	VC2B	89
	8	07-15-77	1:40,000	B&W	ASCS	53063	181
	9	06-18-78	1:42,000	CC	EMSL	7853	103
	10	03-07-82	1:24,000	CC	EMSL	8201	63
	11	07-10-85	1:24,000	CC	EMSL	85855	51

†Film type identification:

B&W: Black-and-White Panchromatic

CC: Conventional Color

Photo source identification:

EROS: U.S. Department of the Interior, Geological Survey, Earth Resources
Observation Systems Data center, Sioux Falls, South Dakota.

ASCS: U.S. Department of Agriculture, Agricultural Stabilization and Conservation
Service, Salt Lake City, Utah.

EMSL: U.S. Environmental Protection Agency, Environmental Monitoring Systems
Laboratory, Las Vegas, Nevada.

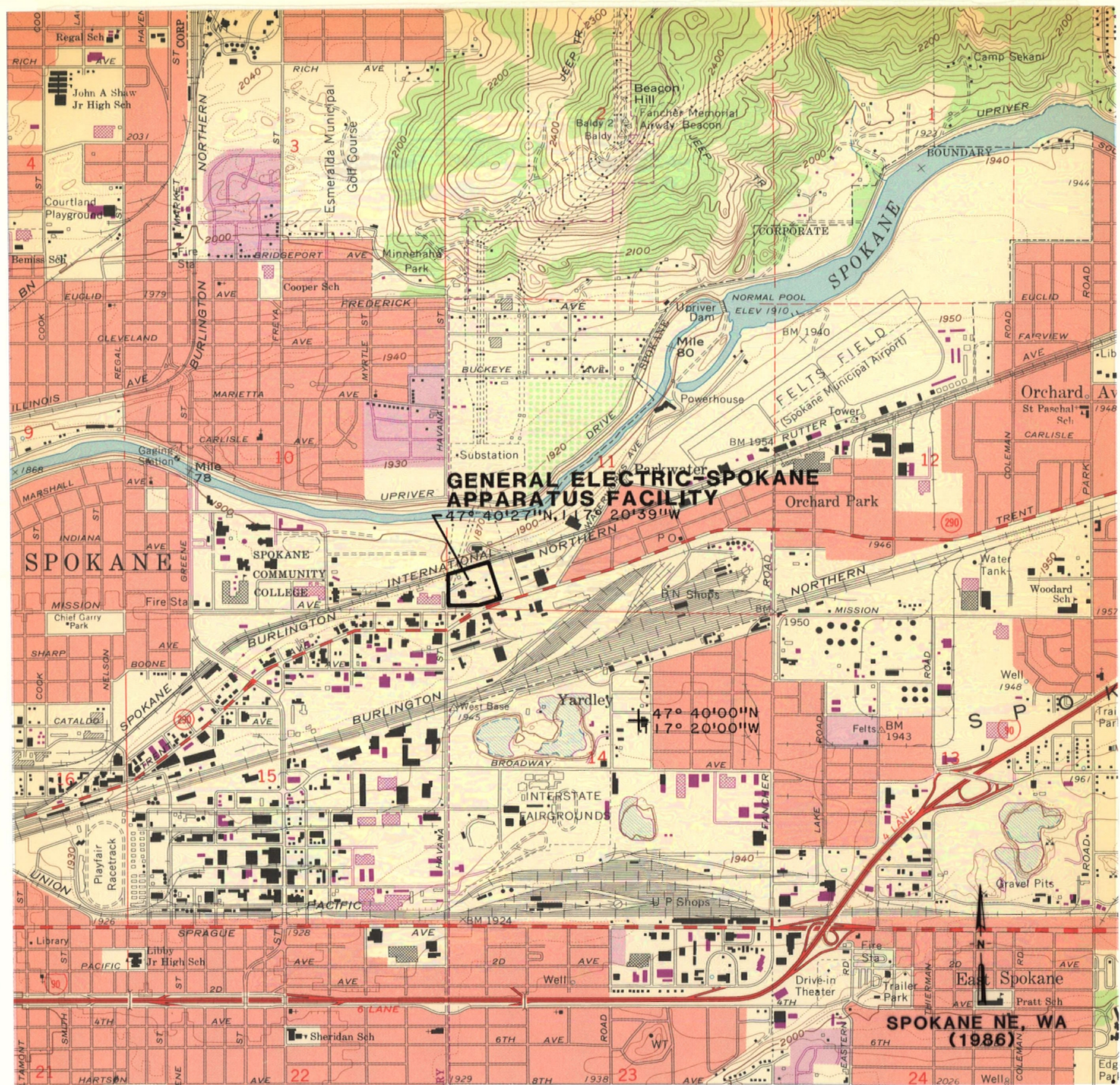


Figure 2. Local site location map, Spokane, Washington. Scale 1:24,000.

ANALYSIS SUMMARY

The General Electric-Spokane Apparatus facility site is located in Spokane, Washington (Figure 2). The site covers approximately 12 acres in very flat terrain adjacent to the Spokane River, subjecting it to a high possibility of flooding from a 100-year flood event. There are no wetlands in the area.

In 1946, the future site of the facility is depicted. By 1951, a lumber mill occupies the site with a lagoon located on an adjacent parcel of land to the east. One possible location of waste disposal is present in 1962. The lagoon appears in disuse by 1968. Three possible stains and debris accumulation are also visible. The 1972 photo reveals additional debris accumulation, one possible stain, possible vegetation stress, and two new areas of possible waste disposal. By 1982, additional waste is present at one of the possible waste disposal areas first identified in 1972 and also adjacent to a small building. A possible staging of drums is noted in 1985.

The site is very level and displays no evidence of drainage exiting the site during the entire period analyzed. To the north of the site, the Spokane River flows to the west.

PHOTO ANALYSIS

NOVEMBER 11 1946 (FIGURE 3)

The future site of the General Electric facility is located between the Burlington Northern Railroad and State Route 290. A farmstead occupies a portion of the site.

JULY 19, 1951 (FIGURE 4)

A fully operational lumber mill occupies the site and the adjacent parcel of land to the east. Lumber is stored in various areas throughout the site and on the north side of the railroad. A large building is under construction near the railroad. A lagoon and mill is visible to the east. No evidence of a creosote operation exists.



INTERPRETATION CODE

BOUNDARIES AND LIMITS

- X—X—X—X—X— FENCED SITE BOUNDARY
- UNFENCED SITE BOUNDARY
- X X X X X X FENCE
- STUDY AREA

DRAINAGE

- DRAINAGE
- ← FLOW DIRECTION
- INDETERMINATE DRAINAGE

TRANSPORTATION/UTILITY

- ===== VEHICLE ACCESS
- +++++ RAILWAY

SITE FEATURES

- ||||| DIKE
- SL STANDING LIQUID
- SL STANDING LIQUID
- EXCAVATION, PIT (EXTENSIVE)
- MOUNDED MATERIAL (EXTENSIVE)
- MM MOUNDED MATERIAL (SMALL)
- CR CRATES/BOXES
- DR DRUMS
- HT HORIZONTAL TANK
- PT PRESSURE TANK
- VT VERTICAL TANK
- CA CLEARED AREA
- DG DISTURBED GROUND
- FL FILL
- IM IMPOUNDMENT
- LG LAGOON
- OF OUTFALL
- SD SLUDGE
- ST STAIN
- SW SOLID WASTE
- TR TRENCH
- VS VEGETATION STRESS
- WD WASTE DISPOSAL AREA
- WL WETLAND

Figure 4. General Electric-Spokane Apparatus facility, July 19, 1951. Approximate scale 1:3,975.

AUGUST 14, 1962 (FIGURE 5)

Raw timber and lumber are no longer being stored at the site or at the parcel to the east. The large building under construction in 1951 has been completed; however, the building to the south has been partially dismantled. A possible area of waste disposal is visible near the large building. A new building further to the south is present. The lagoon to the east appears to be empty.

JULY 4, 1968 (FIGURE 6)

The large building first observed in 1951 has been fully dismantled and the building immediately to the south has undergone further dismantlement. The possible waste disposal present in 1962 is no longer present. Three possible stains and an accumulation of debris are visible near the building to the south. The primary area of the lumber mill to the east has been dismantled.

JULY 27, 1972 (FIGURE 7)

Additional debris accumulation is visible at the former location of the large building at the north end of the site. A possible stain and vegetation stress are present at the building located in the southwest portion of the site. Two possible waste disposal areas are located in the western portion of the site. Materials are stored to the east.

JULY 15, 1977 (FIGURE 8)

A new building is visible in the northern portion of the site. Debris is still located to the west. A stain is located on the eastern periphery of the site. The two possible waste disposal areas seen in 1972 are still visible. Two smaller areas of waste disposal and materials storage are visible at the same areas. A set of storage buildings has been constructed to the east.



INTERPRETATION CODE

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- UNFENCED SITE BOUNDARY
- X X X X X FENCE
- STUDY AREA

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- FLOW DIRECTION
- INDETERMINATE DRAINAGE

TRANSPORTATION/UTILITY

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- ++++ RAILWAY

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- IM IMPOUNDMENT
- LG LAGOON
- OF OUTFALL
- SD SLUDGE
- ST STAIN
- SW SOLID WASTE
- TR TRENCH
- VS VEGETATION STRESS
- WD WASTE DISPOSAL AREA
- WL WETLAND

Figure 8. General Electric-Spokane Apparatus facility, July 15, 1977. Approximate scale 1:5,610.

JUNE 18, 1978 (FIGURE 9)

No substantial changes have occurred at the site since the 1977 photocoverage.



INTERPRETATION CODE

BOUNDARIES AND LIMITS

- x—x—x FENCED SITE BOUNDARY
- UNFENCED SITE BOUNDARY
- x x x x x FENCE
- STUDY AREA

DRAINAGE

- DRAINAGE
- FLOW DIRECTION
- INDETERMINATE DRAINAGE

TRANSPORTATION/UTILITY

- ===== VEHICLE ACCESS
- ++++ RAILWAY

SITE FEATURES

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Figure 9. General Electric-Spokane Apparatus facility, June 18, 1978. Approximate scale 1:5,610.

MARCH 7, 1982 (FIGURE 10)

A light-toned substance is visible in the northeast corner of the site. The stain seen in 1978 is somewhat larger, but appears to be associated with vehicular traffic rather than leakage or spillage. To the west of the stain at the old possible waste disposal areas first identified in 1972 exists an additional stain, waste disposal, and materials storage area. On the northern boundary, is a new small area of waste adjacent to a small building.

July 10, 1985 (FIGURE 11)

A possible staging of drums is located directly south of the large debris accumulation at the north site boundary. They are located on level ground so no potential for migration of pollutants off-site exists. Large stains, probably associated with vehicular traffic, are evident in the southeast portion of the site. No other significant features or changes were observed.

